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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/830,003

04/23/2004

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P24945

7650

7055 7590 04/14/2008
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EXAMINER

ZHU, WEIPING

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

04/14/2008

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/830,003
Filing Date: April 23, 2004
Appellant(s): SCHEMMELE ET AL.

Sean Myers-Payne
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed February 7, 2008 appealing from the Office action mailed August 8, 2007.

I. Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

II. Related Appeals and Interferences

The examiner is not aware of any related appeals, interference, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

The statement of the status of claims contained in the brief is correct.

IV. Status of Amendments After Final

The appellant's statement of the status of amendment after final rejection contained in the brief is correct.

V. Summary of Claimed Subject Matter

The appellant's statement of the summary of claimed subject matter contained in the brief is correct.

VI. Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the ground of rejection to be reviewed on appeal contained in the brief is correct.

VII. Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

VIII. Evidence Relied Upon

JP 2003-055747

Takashi et al.

02-2003

VIII. Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-17 and 28-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2003-055747.

With respect to claims 1, 28, 3-7 and 29-32, JP ('747) discloses a sintered tool steel having a composition in wt% of: 0.8 to 2.5% C, 3 to 8% Cr, 1 to 10% Mo, 1 to 20% W, 1 to 7% V, $\leq 15\%$ Co, $\leq 1\%$ Si, $\leq 1\%$ Mn and the balance Fe with inevitable impurities (claim 2, the translation). The composition ranges of the elements present in the sintered tool steel of JP ('747) overlap the claimed ranges of the elements respectively. The overlapping range establishes a prima facie case of obviousness. See MPEP 2144.05 I. It would have been obvious to one skilled in the art to have selected the claimed ranges in the disclosed ranges of JP ('747), because JP ('747) discloses the same utility in the whole disclosed ranges. The 0 wt% of the lower limits of the concentrations of P, S, Ni, Cu, Al, N and O in the claims 1 and 3-6 does not require the presences of these elements. The "cold work" in the claim 1 is a recitation of an intended use and gives no patentable weight to the claim. See MPEP 2111.02 II.

With respect to claims 15-17 and 36-39, JP ('747) discloses a process for producing the sintered tool steel comprising: gas-atomizing the melt to produce a metal powder having a particle diameter of less than 75 μm ; filling the powders in a steel container; sealing the container; vacuum-degassing the container; extruding the container containing the powders, shape-sintering or hot isostatic pressing the container containing the powders followed by repeated wire drawing and annealing (paragraphs [0017] and [0018], the translation). JP ('747) does not specify the gas used in the gas

atomization. However, one of ordinary skill in the art would expect an inert gas including nitrogen as claimed in the instant claims 15, 38 and 39 would have been used in the gas atomization of JP ('747) in order to prevent possible contaminations of the powders.

The particle diameter range of JP ('747) is within the claimed range in claims 15 and 37. The process steps of JP ('747) are substantially identical to the claimed process steps.

With respect to claims 8-10, 33 and 34, JP ('747) teaches the same composition and the same process as stated above; therefore, it would have been expected that the composition of JP ('747) contains the same impurities. See MPEP 2112.01 [R-3].

With respect to claims 2, 11-14 and 35, JP ('747) does not specify the claimed properties. However, it has been well held where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977), MPEP 2112.01 [R-3] I. In the instant case, the sintered tool steel of JP ('747) is produced by identical or substantially identical processes; therefore, a prima facie case of obviousness exists. The same impact strength and the same yielding point as claimed in the instant claims 2 and 11-14 would have been expected in the sintered tool steel of JP ('747) as in the claimed material.

X. Response to Argument

The appellant's arguments in the Appeal Brief filed on February 7, 2008 have been fully considered, but they are not persuasive.

With respect to claims 1 and 28, the appellant argues that 1) the disclosure of JP ('747) that $(2\text{Mo} + \text{W}) = 15\text{-}30\%$ is a requirement, which does not overlap the maximum value of 11% arrived at by applying appellant's claimed ranges of Mo and W to JP ('747)'s requirement of $(2\text{Mo} + \text{W})$; 2) while JP ('747) teaches that a high carbide content (ensured by the formula of $(2\text{Mo} + \text{W}) = 15\text{-}30\%$) was desirable to achieving toughness, the present inventors discovered that a lower carbide content was actually more desirable; and 3) given the very strong emphasis in the importance of $(2\text{Mo} + \text{W})$ being 15-30%, it is reasonable to conclude that a choice of any other values would destroy the intended function of, or perhaps even render inoperable, the alloy disclosed in JP ('747).

In response, the examiner notes that the purpose of the limitation of $(2\text{Mo} + \text{W}) \geq 15\%$ is to ensure a desired amount of carbide to be formed in the tool steel of JP ('747) for improved wear-resistance, strength, hardness and heat-resistance while the purpose of the limitation of $(2\text{Mo} + \text{W}) \leq 30\%$ is to ensure the carbide content does not become excessive to cause a marked fall in toughness (paragraph [0009], the translation). JP ('747) discloses that refining austenite crystal grain size, the size of the carbide as well as improving the distribution of the carbide would improve wear resistance, strength, ductility and grindability of the tool steel (paragraphs [0003]-[0005], the translation). JP ('747) disclose a process and an alloy composition that allow for higher $(2\text{Mo} + \text{W})$ values to achieve higher strengths without sacrificing toughness of the tool steel (paragraphs [0003]-[0006], the translation). Using any other values of $(2\text{Mo} + \text{W})$ beyond the range of JP ('747) would cause a loss of the expected benefits as disclosed

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by JP ('747), but would not render the alloy of JP ('747) inoperable as asserted by the appellant. Inoperativeness of a reference is not established by merely showing that the particular disclosed embodiment is lacking in perfection. *Ex parte Allen* 2 USPQ 2d 1425, 1428 (BPAI 1987); *Decca Ltd. v. United States* 191 USPQ 439 (Ct. Clms. 1976); *Bennett v. Halahan* 128 USPQ 398, 401 (CCPA 1961). It is also well held that mere disclosure of alternative designs does not teach away. See *In re Fulton*, 391 F. 3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). Furthermore, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. *In re Boesch*, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the total amount of Mo and W as defined by the formula of $(2\text{Mo} + \text{W}) = 15\text{-}30\%$ in the tool steel of JP ('747) is a result-effective variable, because it would directly affect the contents of the Mo and W carbides and the final properties of the tool steel of JP ('747) as disclosed by JP ('747) (paragraph [0009], the translation). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the total amount of Mo and W as defined by the formula of $(2\text{Mo} + \text{W}) = 15\text{-}30\%$ in the tool steel for the desired contents of the Mo and W carbides and desired final properties of the tool steel. See MPEP 2144.05 II.

With respect to claims 2-17 and 29-39, the appellant argues that these claims are dependent upon on either claim 1 or claim 28 directly or indirectly and that some of these claims further limit the value of $(2\text{Mo} + \text{W})$ to 9.8% or 9.0%; therefore, the obviousness rejections of these claims over JP ('747) should be withdrawn.

In response, see the response to the appellant's arguments with respect to claims 1 and 28 in the paragraph above.

XI. Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and interferences section of the examiner's answer.

For the above reasons, it is believed that rejections should be sustained.

Respectively submitted,

/Weiping Zhu/

Examiner, Art Unit 1793

Roy King

/Roy King/

Supervisory Patent Examiner, Art Unit 1793

/Kathryn L Gorgos/

Appeals Conferee

Kathryn Gorgos

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